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09/927,444	08/13/2001	Nicholas A. Ward	6217/Consilium/DV	4154

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APPLIED MATERIALS, INC.
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SANTA CLARA, CA 95050

EXAMINER

SHECHTMAN, SEAN P

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/927,444

Applicant(s)

WARD ET AL.

Examiner

Sean P. Shechtman

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6-9, 11-14.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-52 are presented for examination.

Information Disclosure Statement

2. The information disclosure statements filed 7/1/02, 9/19/02, 4/25/03, 10/9/03, 12/31/02, 4/25/03, 11/19/02, and 12/18/03 contain a large number of references submitted for consideration that appear to be cumulative and are consistent with the progress in the art. In view of the number of references in this application, the Applicant is requested to identify any specific references, features, sections or figures in the references cited which are believed to have particular significance in the prosecution of this application or which are considered material to the patentability of the pending claims, for further consideration by the examiner.

3. Regarding the information disclosure statements filed 7/1/02, 9/19/02, 4/25/03, 10/9/03, 12/31/02, 4/25/03, 11/19/02, and 12/18/03. The examiner has reviewed and considered all the cited references and has determined that most references appear to be commensurate with the state of the art of semiconductor manufacturing and are not necessarily specific to determining the patentability of the claimed invention. Examiner has initialed the references that are considered pertinent to the instant application and has lined through the remaining references that are not considered to be material to the patentability of the claimed invention. If the applicant feels that one of the lined through references is material to the patentability of the application and should be cited on any possible printed patent document, it is requested that that document be pointed out in the response to this office action.

Drawings

Art Unit: 2125

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Fig. 5, element 501; Fig. 6, element 601; Fig. 7, element 701; Fig. 8, element 801.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

Examiner respectfully submits that page 16, line 20 should be rephrased. Appropriate correction is required.

Claim Objections

6. Claim 18 is objected to because of the following informalities:

Examiner respectfully submits that claim 18 should be rephrased. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The terminology used to designate plural and singular qualities, processes, and chambers is not clear. For example, claim 1 is directed towards qualities of at least one of: a processing

Art Unit: 2125

time required to perform the process, a rate of producing defective output products of the process, a uniformity of output products of the process, and a capability index of the process. Examiner respectfully submits that, should the claims be interpreted as including only one of these qualities, it is unclear how one of these qualities includes all of these qualities, and hence the term “and” in line 10 of claim 1 is not clear. For purposes of examination, it will be assumed the term “and” in line 10 of claim 1 is “or”, and therefore claim 1 is directed towards any of these qualities.

Examiner respectfully submits that claims 2-52 contain a similar or analogous arrangement of terms used towards claimed qualities, processes, and chambers, and therefore claims 2-52 are also found to be indefinite. For purposes of examination, similar or analogous assumptions will be made to claims 2-52 as well.

8. Referring to claims 4, 15, 26, 38, 8, 19, 30, 42, 9, 20, 31, 43, 45-47, 49-51, and any claims that depend therefrom, examiner respectfully asks, how is the information “related” to the specified qualities?

9. Due to the number of 35 USC § 112 rejections, the examiner has provided a number of examples of the claim deficiencies in the above rejections, however, the list of rejections may not be all inclusive. Applicant should refer to these rejections as examples of deficiencies and should make all the necessary corrections to eliminate the 35 USC § 112 problems and place the claims in proper format.

Due to the vagueness and a lack of clear definition of the terminology and phrases used in the specification and claims, the claims have been treated on their merits as best understood by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 2, 4, 6, 7, 9, 12, 14, 15, 17, 18, 20, 23, 24, 26, 28, 29, 31, 33, 36, 38, 40, 41, 43 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 6,074,443 to Venkatesh.

Referring to claims 1, 12, 23, 33, Venkatesh discloses a semiconductor fabrication system, method, means, and medium (Col. 1, lines 21-25) comprising:

a first semiconductor fabrication tool (Col. 1, lines 34-40; Col. 3, lines 28-32), wherein the first semiconductor fabrication tool comprises a first chamber configured to perform at a process on a semiconductor wafer (Col. 1, lines 41-65; Col. 3, lines 28-32); and a software application (Col. 7, lines 15-26), in communication with the first semiconductor fabrication tool, configured to determine first specified qualities of the first chamber in performing the process, wherein the first specified qualities are directed a processing time required to perform the process (Col. 3, lines 63-66).

Examiner respectfully notes page 2, lines 3-4 of the instant specification, wherein applicant teaches that the process and tool controller can include the software applications.

Referring to claims 2, 14, 24, 36, Venkatesh discloses the system above, wherein the process of the first chamber is a deposition process (Col. 2, lines 11-12).

Referring to claims 4, 15, 26, 38, Venkatesh discloses the system above, wherein the software application is further configured to generate detailed status information that includes information relating to the first specified qualities (Col. 3, lines 50-55) of the first chamber and relating to maintenance information of the first chamber (Col. 2, lines 60-63). Examiner respectfully submits that the remaining processing time on a wafer is the status of a chamber that is busy. This information is related to processing time, because it is based on processing time.

Referring to claims 6, 17, 28, 40, Venkatesh discloses the system above, wherein the first semiconductor fabrication tool further comprises:

a second chamber configured to perform a process on a semiconductor wafer (Col. 1, lines 41-65; Col. 3, lines 28-32), wherein the software application is further configured to determine second specified qualities of the second chamber in performing the process, and wherein the second specified qualities are directed to a processing time required to perform the process of the second chamber (Col. 3, lines 63-66).

Referring to claims 7, 18, 29, 41, Venkatesh discloses the system above, wherein the process of the second chamber a deposition process (Col. 2, lines 11-12).

Referring to claims 9, 20, 31, 43, Venkatesh discloses the system above, wherein the software application is further configured to receive a request to perform a first requested process and select the first chamber to perform the first requested process based on specified preferences which form part of the request and on the information relating to the first and second specified

Art Unit: 2125

qualities of the first and second chambers (Col. 9, lines 55-67; Col. 11, lines 38-46; Claims 1-11).

11. Claims 12, 14, 17, 18, 23, 24, 28, 29, 33, 36, 40, 41 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. No. 6,492,281 to Song.

Referring to claims 12, 23, 33, Song discloses a semiconductor fabrication system, method, means, and medium (Col. 3, line 61 – Col. 4, line 10) comprising:

a first semiconductor fabrication tool (Col. 3, lines 20-40), wherein the first semiconductor fabrication tool comprises a first chamber configured to perform at a process on a semiconductor wafer (Col. 3, lines 20-40); an application, in communication with the first semiconductor fabrication tool, configured to determine first specified qualities of the first chamber in performing the process, wherein the first specified qualities are directed to a processing time required to perform the process (Col. 8, claim 14).

Referring to claims 14, 24, 36, Song discloses the system above, wherein the process of the first chamber is of a deposition process (Col. 3, lines 31-33).

Referring to claims 17, 28, 40, Song discloses the system above, wherein the first semiconductor fabrication tool further comprises:

a second chamber configured to perform a process on a semiconductor wafer, wherein the software application is further configured to determine second specified qualities of the second chamber in performing the process, and wherein the second specified qualities are directed a processing time required to perform the process of the second chamber, a rate of producing defective output products of the process of the second chamber, a uniformity of output products

of the process of the second chamber, and a capability index of the process of the second chamber (Col. 8, claim 14).

Referring to claims 18, 29, 41, Song discloses the system above, wherein the process of the second chamber is a deposition process (Col. 3, lines 31-33).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-3, 8, 9, 12-14, 19, 20, 23-25, 30, 31, 33, 36, 37, 42, 43, 45, 46, 49, 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,862,054 to Li in view of U.S. Pat. No. 6,604,012 to Cho.

Referring to claims 1, 12, 23, 33, Li discloses a semiconductor fabrication system, method, means, and medium (Abstract; Fig. 1) comprising:

a first semiconductor fabrication tool (Fig. 1, element 11; Fig. 2B, element 11), wherein the first semiconductor fabrication tool comprises a vacuum configured to perform at a process on a semiconductor wafer (Col. 2, lines 31-36); an application, in communication with the first semiconductor fabrication tool, configured to determine first specified qualities of the vacuum in performing the process, wherein the first specified qualities are a capability index of the process (Col. 2, lines 31-42; Col. 3, lines 11-27).

Referring to claims 3, 13, 25, 37, Li discloses the system above, wherein the capability index is a Cpk value (Col. 2, lines 31-42; Col. 3, lines 11-27; Col. 6, lines 30-34).

Art Unit: 2125.

Li teaches determining Cpk values from analysis of process parameters of a vacuum. Examiner respectfully submits that one of ordinary skill in the art would perform the vacuuming process in a chamber, however, Li fails to teach such a chamber. Li teaches control of the analysis and processing with a computer (Col. 3, lines 27-67). Examiner respectfully submits that one of ordinary skill in the art would perform the control and analysis using computer software, however, Li fails to teach software.

However, Cho teaches analogous art wherein, referring to claims 1, 12, 23, 33, Cho discloses a semiconductor fabrication system, method, means, and medium (Col. 1, lines 20-28 of '012) comprising:

a first semiconductor fabrication tool (Col. 1, lines 55-60 of '012), wherein the first semiconductor fabrication tool comprises a first chamber (Col. 14, lines 19-67 of '012) configured to perform at a process on a semiconductor wafer (Col. 1, lines 55-60; Col. 8, lines 22-57 of '012); and a software application (Col. 8, lines 57-60; Col. 17, lines 32-45 of '012), in communication with the first semiconductor fabrication tool, configured to determine first specified qualities of the first chamber in performing the process, wherein the first specified qualities are directed to a capability index of the process (Col. 3, lines 41-51; Col. 9, lines 22-37; Col. 10, lines 14-21; Col. 12, lines 8-15 of '012).

Examiner respectfully notes page 2, lines 3-4 of the instant specification, wherein applicant teaches that the process and tool controller can include the software applications.

Referring to claims 2, 14, 24, 36, Cho discloses the system above, wherein the process of the first chamber is an etching process (Col. 1, line 32 of '012).

Referring to claims 3, 13, 25, 37, Cho discloses the system above, wherein the capability index is a Cpk value (Col. 18, lines 15-29 of '012).

Referring to claims 8, 19, 30, 42, 45, 49, Cho discloses the system above, wherein the software application is further configured to (a) receive a request from an external application to qualify the first and second chambers for a first requested process (Col. 3, lines 26-34 of '012); and (b) make accessible information relating to the first and second specified qualities of the first and second chambers (Col. 13, lines 35-60 of '012).

Referring to claims 9, 20, 31, 43, 46, 50, Cho discloses the system above, wherein the software application is further configured to receive a request to perform a first requested process and select *one of the* first and second chambers to perform the first requested process based on specified preferences which form part of the request and on the information relating to the first and second specified qualities of the first and second chambers (Col. 3, lines 26-34 of '012).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Cho with the teachings of Li.

One of ordinary skill in the art would have been motivated to combine these references because Cho teaches a system to improve processing capacity, product quality and yield (Col. 4, lines 57-65 of '012). Furthermore, Cho teaches a system to increase processing capacity and reduce cost and time (Col. 5, lines 66 – Col. 6, line 7 of '012). Furthermore, Cho teaches a system that moves towards a target quality process by process (Col. 7, lines 20-31 of '012).

Art Unit: 2125

13. Claims 10, 11, 21, 22, 32, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,862,054 to Li in view of U.S. Pat. No. 6,604,012 to Cho as applied above, and further in view of U.S. Pat. No. 6,618,692 to Takahashi.

Referring to claims 10, 21, 32, 44, Li fails to disclose the system above, wherein the external application is a remotely located external application in communication with the software application over the Internet.

Referring to claims 11, 22, Li fails to disclose the system of above, wherein the external application communicates the request over a multi-channel communication link.

However, referring to claims 10, 21, 32, 44, Takahashi teaches analogous art, wherein the external application is a remotely located external application in communication with the software application over the Internet (Col. 8, lines 49-65; Col. 9, lines 1-32 of '692).

Referring to claims 11, 22, Takahashi teaches analogous art, wherein the external application communicates the request over a multi-channel communication link (Col. 8, lines 49-65; Col. 9, lines 1-32 of '692).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the teachings of Li with that of Takahashi.

One of ordinary skill in the art would have been motivated to combine these references because Takahashi teaches a remote diagnostic system which aims to achieve both high security of information and prevention of economic losses (Col. 3, lines 36-40 of '692).

14. Claims 47 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,862,054 to Li in view of U.S. Pat. No. 6,604,012 to Cho as applied above, and further in view of U.S. Pat. No. 6,074,443 to Venkatesh.

Referring to claims 47 and 51, Li fails to teach the system above, wherein the software application is further configured to generate detailed status information that includes information relating to the first specified qualities of the first chamber and relating to maintenance information of the first chamber.

However, referring to claims 47 and 51, Venkatesh discloses the system above, wherein the software application is further configured to generate detailed status information that includes information relating to the first specified qualities (Col. 3, lines 50-55 of '443) of the first chamber and relating to maintenance information of the first chamber (Col. 2, lines 60-63 of '443).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the teachings of Li with that of Venkatesh.

One of ordinary skill in the art would have been motivated to combine these references because Venkatesh teaches prioritizing wafer movement through a tool such that the tool's overall throughput is improved (Col. 3, lines 28-36 of '443).

15. Claims 5, 16, 27, 34, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,074,443 to Venkatesh as applied to claims 1, 12, 23, 33 above, and further in view of U.S. Pat. No. 6,618,692 to Takahashi. Claims 48 and 52 are rejected under 35

Art Unit: 2125

U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,862,054 to Li in view of U.S. Pat. No. 6,604,012 to Cho in view of U.S. Pat. No. 6,074,443 to Venkatesh, and further in view of U.S. Pat. No. 6,618,692 to Takahashi.

Referring to claims 5, 16, 27, 34, 39, 48, and 52, Venkatesh and Li fail to disclose the systems above, further comprising the instructions for: (a) receiving, over the Internet, a request from an external application to access information relating to the first specified qualities of said step (2); and (b) making available only a pre-defined portion of the information to be accessed by the external application using an encryption application.

However, referring to claims 5, 16, 27, 34, 39, 48, and 52, Takahashi teaches analogous art, comprising the instructions for: (a) receiving, over the Internet, a request from an external application to access information relating to the first specified qualities of said step (2); and (b) making available only a pre-defined portion of the information (Col. 8, lines 49-65; Col. 9, lines 1-32 of '692) to be accessed by the external application using an encryption application (Col. 7, line 27 – Col. 8, line 48 of '692).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Takahashi with that of Venkatesh.

One of ordinary skill in the art would have been motivated to combine these references because Takahashi teaches a remote diagnostic system which aims to achieve both high security of information and prevention of economic losses (Col. 3, lines 36-40 of '692).

16. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,074,443 to Venkatesh in view of U.S. Pat. No. 6,618,692 to Takahashi and further in view of U.S. Pub. No. 2001/0044667 to Nakano.

Referring to claim 35, Venkatesh and Takahashi fail to teach a Virtual Private Network.

However, referring to claim 35, Nakano teaches analogous art, wherein an encryption application is based on Virtual Private Network (VPN) technology (Abstract; Page 3, paragraph 0054).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the teaching of Venkatesh with the VPN of Nakano.

One of ordinary skill in the art would have been motivated to combine these references because Nakano teaches a system which provides secure two-way communications with a client and thereby progresses the production of semiconductor devices. Furthermore, Nakano teaches a system in which a client can obtain benefits of reduction in product development period, reduction in cost, and improvement in product quality (Page 1, paragraphs 0005-0009; Page 3, paragraphs 0054-0055).

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents or publications are cited to further show the state of the art with respect to accuracy qualities associated with a chamber.

U.S. Pat. No. 6,590,179 to Tanaka.

Art Unit: 2125

The following patents or publications are cited to further show the state of the art with respect to defectively qualities associated with a chamber.

U.S. Pat. No. 6,560,504 to Goodwin.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (703) 305-7798.

The examiner can normally be reached on 9:30am-6:00pm, M-F.

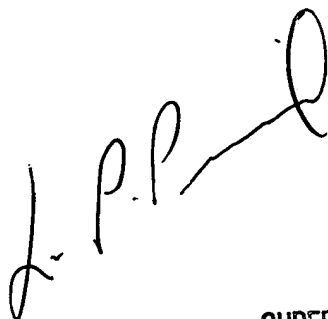
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

SPS

Sean P. Shechtman

January 8, 2004



LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100